Claims:

1. An adjustable chromatic dispersion compensator, comprising:

a length of optical fiber having an optical grating region;

a Fiber Bragg Grating (FBG) provided in said optical grating region, said FBG having a characteristic wavelength and a dispersion compensation profile;

an elongated beam member having a longitudinal neutral axis and provided with a cantilever portion;

securing means for continuously securing the optical grating region along the cantilever portion in a fixed relationship with said neutral axis;

bending means for bending the cantilever portion to generate a strain gradient along the FBG, said strain gradient adjusting the dispersion compensation profile and shifting the characteristic wavelength thereof; and

compressing means for compressing the cantilever portion longitudinally to generate a linear strain in the FBG, said linear strain rectifying the characteristic wavelength thereof.

2. The adjustable dispersion compensator according to claim 1, wherein the dispersion compensation profile is defined by a linear chirp in the FBG.

3. The adjustable dispersion compensator according to claim 1, wherein the cantilever portion has a constant cross-section perpendicular to the neutral axis along the optical grating region.

4. The adjustable dispersion compensator according to claim 1, wherein the optical grating region is secured to the cantilever portion in parallel to the neutral axis.

5. The adjustable dispersion compensator according to claim 1, wherein the securing means are selected from the group comprising glue, an epoxy type material and a solder.

6. The adjustable dispersion compensator according to claim 1, wherein the securing means comprise a fiber-guiding area receiving the optical grating region of the length of optical fiber therealong.

7. The adjustable dispersion compensator according to claim 1, wherein the cantilever portion has first and second opposed extremities, and the beam member comprises an anchor portion connected to said first extremity of the cantilever portion.

8. The adjustable dispersion compensator according to claim 7, further comprising a hollow member having opposite ends and longitudinally receiving the beam member therein, the anchor portion of the beam member fitting snugly in the hollow member.

9. The adjustable dispersion compensator according to claim 8, wherein the bending means comprise:

a pair of lateral screws projecting transversally in the hollow member on opposite sides of the cantilever portion of the beam member; and

opposed threaded cavities extending transversally through the hollow member cooperating with said lateral screws.

10. The adjustable dispersion compensator according to claim 8, wherein the compression means further comprise:

a pressure exerting mechanism exerting a longitudinal pressure on the beam member from one of the opposite ends of the hollow member; and

a restraining element longitudinally restraining the beam member at the other one of said opposite ends of the hollow member.

11. The adjustable dispersion compensator according to claim 10, wherein the restraining element is defined by a transversal wall integral to said hollow member.

12. The adjustable dispersion compensator according to claim 10, wherein the pressure exerting mechanism comprises:

a compression screw projecting longitudinally inside said hollow member; and

threads extending inside said hollow member and cooperating with the compression screw.

13. The adjustable dispersion compensator according to claim 12, further comprising an athermalising insert extending in said hollow member between the compression screw and the beam member.

14. The adjustable dispersion compensator according to claim 13, wherein the hollow member, compression screw, athermalising insert and beam member each have a coefficient of thermal expansion (CTE) selected so that they together compensate for effects of temperature variations on the characteristic wavelength of the FBG.

15. The adjustable dispersion compensator according to claim 14, wherein the CTE of the athermalising insert is sizeably larger than the CTE of each of the hollow member, compression screw, and beam member.

16. The adjustable dispersion compensator according to claim 15, wherein the hollow member, compression screw, and beam member are each made of invar, and the athermalising insert is made of aluminum.

17. An adjustment assembly for a chromatic dispersion device, said device comprising a length of optical fiber having an optical grating region and a Fiber Bragg Grating (FBG) provided in said optical grating region, said FBG having a characteristic wavelength and a dispersion compensation profile, the adjustment assembly comprising:

an elongated beam member having a longitudinal neutral axis and provided with a cantilever portion;

securing means for continuously securing the optical grating region along the cantilever portion in a fixed relationship with said neutral axis;

bending means for bending the cantilever portion to generate a strain gradient along the FBG, said strain gradient adjusting the dispersion compensation profile and shifting the characteristic wavelength thereof; and

compressing means for compressing the cantilever portion longitudinally to generate a linear strain in the FBG, said linear strain rectifying the characteristic wavelength thereof.

18. The adjustment assembly according to claim 17, wherein the cantilever portion has a constant cross-section perpendicular to the neutral axis along the optical grating region.

19. The adjustment assembly according to claim 17, wherein the optical grating region is secured to the cantilever portion in parallel to the neutral axis.

20. The adjustment assembly according to claim 17, wherein the securing means are selected from the group comprising glue, an epoxy type material and a solder.

21. The adjustment assembly according to claim 1, wherein the securing means comprise a fiber-guiding area receiving the optical grating region of the length of optical fiber therealong.

22. The adjustment assembly according to claim 17, wherein the cantilever portion has first and second opposed extremities, and the beam member comprises an anchor portion connected to said first extremity of the cantilever portion.

23. The adjustment assembly according to claim 22, further comprising a hollow member having opposite ends and longitudinally receiving the beam member

therein, the anchor portion of the beam member fitting snugly in the hollow member.

24. The adjustment assembly according to claim 23, wherein the bending means comprise:

a pair of lateral screws projecting transversally in the hollow member on opposite sides of the cantilever portion of the beam member; and

opposite threaded cavities extending transversally through the hollow member cooperating with said lateral screws.

25. The adjustment assembly according to claim 23, wherein the compression means further comprise:

a pressure exerting mechanism exerting a longitudinal pressure on the beam member from one of the opposite ends of the hollow member; and

a restraining element longitudinally restraining the beam member at the other one of said opposite ends of the hollow member.

26. The adjustment assembly according to claim 25, wherein the restraining element is defined by a transversal wall integral to said hollow member.

27. The adjustment assembly according to claim 25, wherein the pressure exerting mechanism comprises:

a compression screw projecting longitudinally inside said hollow member; and

threads extending inside said hollow member and cooperating with the compression screw.

28. The adjustment assembly according to claim 27, further comprising an athermalising insert extending in said hollow member between the compression screw and the beam member.

29. The adjustment assembly according to claim 28, wherein the hollow member, compression screw, athermalising insert and beam member each have a coefficient of thermal expansion (CTE) selected so that they together compensate for effects of temperature variations on the characteristic wavelength of the FBG.

30. The adjustment assembly according to claim 29, wherein the CTE of the athermalising insert is sizeably larger than the CTE of each of the hollow member, compression screw, and beam member.

31. The adjustment assembly according to claim 30, wherein the hollow member, compression screw, and beam member are each made of invar, and the athermalising insert is made of aluminum.

32. A method for adjusting the dispersion compensation profile of a Fiber Bragg Grating (FBG) provided in an optical grating region of a length of optical fiber and having a characteristic wavelength, the method comprising the steps of:

a) continuously securing the optical grating region along the cantilever portion of an elongated beam member, in a fixed relationship with a neutral axis extending longitudinally through said beam member;

b) bending the cantilever portion to generate a strain gradient along the FBG, said strain gradient adjusting the dispersion compensation profile and shifting the characteristic wavelength thereof; and

c) compressing the cantilever portion longitudinally to generate a linear strain in the FBG, said linear strain rectifying the characteristic wavelength thereof.

33. The method according to claim 32, wherein step a) further comprises securing the optical grating region to the cantilever portion in parallel to the neutral axis.

34. The method according to claim 32, wherein step a) further comprises providing securing means selected from the group comprising glue, an epoxy type material and a solder.

35. The method according to claim 32, wherein step a) further comprises disposing the optical grating region of the length of optical fiber along a fiber-guiding area provided in the cantilever portion.

36. The method according to claim 32, comprising an additional step between steps a) and b) of inserting the beam member longitudinally in a hollow member having opposite ends.

37. The method according to claim 36, wherein step b) comprises sub steps of:

i) inserting a pair of lateral screws transversally in the hollow member on opposite sides of the cantilever portion of the beam member, opposite threaded cavity being provided transversally through the hollow member and cooperating with said lateral screws;

ii) loosening one of said lateral screws and tightening the other one of said lateral screws in sequence until a desired bending of the cantilever beam is reached.

38. The method according to claim 37, wherein step b) comprises an additional sub step of:

iii) tightening both lateral screws of said pair to secure the cantilever beam in the reached desired bending.

39. The method according to claim 36, wherein step c) comprises the sub steps of:

i) exerting a longitudinal pressure on the beam member from one of the opposite ends of the hollow member; and

ii) longitudinally restraining the beam member at the other one of said opposite ends of the hollow member.

40. The method according to claim 39, wherein sub step c)i) comprises longitudinally inserting a compression screw projecting inside the hollow member,

threads being provided inside said hollow member for cooperating with the compression screw, and rotating said compression screw.

41. The method according to claim 40, further comprising an additional step of athermalising the chromatic dispersion compensator, said additional step comprising providing an athermalising insert inside the hollow member between the compression screw and the beam member.

42. The method according to claim 41, wherein said additional step comprises selecting coefficient of thermal expansion (CTE) of each of the hollow member, compression screw, athermalising insert and beam member so that they together compensate for effects of temperature variations on the characteristic wavelength of the FBG.

43. The method according to claim 42, wherein said additional step comprises further comprises selecting the CTE of the athermalising insert so that it is sizeably larger than the CTE of each of the hollow member, compression screw, and beam member.